TRW does not come easily to this view, given the clear need for additional global MSS spectrum as soon as practicable, but it is now evident that this spectrum is not likely to be viable for MSS use, even in this country, until well after the year 2000. A portion of the spectrum allocated at WARC-92 to MSS was recently reallocated here to the PCS, and a revised global MSS allocation is now needed.[39/] Formal discussions with incumbent domestic users in the current and proposed MSS band have only recently begun concerning possible transition to MSS use. These discussions have revealed that there is no easy short-term solution to free up this spectrum. In the existing downlink band, for example, the 1990-2010 MHz band is very heavily used for broadcast auxiliary services ("BAS"), including electronic news gathering ("ENG").[40/] Costs of moving ENG users to other bands may prove to be

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39/ The lower 10 MHz of the existing band earmarked for global MSS at WARC-92 has now been allocated for Personal Communications Services within the United States, effectively precluding use for MSS. See Second NOI, FCC 95-36, slip op. at ¶ 62. Although the Commission has proposed domestically to add the 2010-2025 MHz band for MSS uplink use, this change itself will require a change to the international table of allotments at WRC-95. See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service (ET Docket No. 95-18), FCC 95-36, slip op. released January 31, 1995 ("2 GHz NPRM").

40/ Because of this heavy use, the Association for Maximum Service Television ("MSTV") has previously urged the Commission not to seek an acceleration of the 2005 implementation date for MSS in these bands, and has also requested that the allocation not be implemented domestically prior to that date. See Reply Comments of MSTV, ET Docket No. 93-198, at 3, 5 (filed July 29, 1993).

prohibitively high, and the issue of which entities should bear this cost is a complicated one, not susceptible to easy resolution.[41/]

While complex, the problem is not one that is without substantial probability of an ultimate solution. An apparent answer lies in the fact that most broadcasters are expected to adopt digital technology for ENG services beginning over the course of the next decade. This change will be necessary for terrestrial broadcasters to keep pace with the picture enhancements made possible by the transition to High Definition Television and digital techniques that are now being adopted by cable and Direct Broadcast Satellite services. To remain competitive, broadcasters will need to adapt. This time of adaptation will provide an ideal opportunity to alter equipment standards and rechannelize to new frequency bands, perhaps using narrower bandwidths.[42/] This transition is unlikely to begin,

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41/ One of several complications is the fact that the FCC has proposed to relocate the BAS to bands now occupied by fixed service users, which in turn would need to be relocated to other frequencies allocated to this service. See 2 GHz NPRM, FCC 95-39, slip op. at ¶ 9. At a recent meeting of an ad hoc working group of the IAC, representatives of the fixed service users in these bands estimated that the cost of relocating just these users could be $ 2.5 billion. See Minutes from 2 GHz MSS Transition Plan Ad Hoc Sub-Working Group at 2 (dated February 23, 1995). When this figure is combined with the cost of relocating the BAS itself, the proposal is prohibitively expensive, and clearly could not be borne by the nascent MSS industry, which must expend billions of dollars just to begin offering service.

42/ The BAS channels are currently 17 MHz wide, but could be narrowed to 12 MHz to enhance spectrum efficiency. With such changes, BAS may very (continued...)

however, until existing equipment is scheduled for replacement, beginning after the turn of the millennium and continuing for as much as a decade thereafter. Thus, the beginning of any transition period for the 2 GHz bands, even in the United States, can reasonably be expected to occur around the year 2005, when the bands are currently scheduled to become available internationally. There is, therefore, little to be gained in seeking to alter this date.

This is particularly true given the fact that these bands are currently very heavily used in the developing world for backbone microwave links. In many countries, these uses were only recently implemented and involve sophisticated and highly sensitive digital networks that would make any spectrum sharing prohibitively difficult, at best. It was for these reasons that countries such as Saudi Arabia and Ecuador, to name just two, insisted upon the 2005 global effective date for the 2 GHz bands and have vociferously opposed any change in that date.

Given these complications, the United States would be well advised not to squander its negotiating capital in an attempt to advance the global 2 GHz implementation date, especially when it will be seeking to expand this allocation to adjacent frequencies. While there is no need for the Commission to alter its decision not to propose in advance a change in the 1996 date of entry under Footnote 746C, it

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42/(...continued)
well be able to relocate to and confine its operations within the 2025-2110 MHz bands without the need for massive relocation of fixed users in other bands.

may ultimately be prudent to offer U.S. adherence to the 2005 date of entry as a means to secure more important concessions, including the allocation of additional MSS spectrum.

B. Final Report Of The Voluntary Group of Experts

In its first comments concerning preparation for WRC-95, TRW cautioned that the Commission and the IAC should review very carefully the proposals of the Voluntary Group of Experts ("VGE"), which is intended to streamline and simplify ITU Radio Regulations and procedures, to ensure that this simplification does not substantively alter existing and newly-proposed rights and requirements. Much of this review has now been completed by the IAC's IWG-1, which has focussed on general regulatory issues and the VGE in particular. TRW is pleased that the IWG-1 has reached the preliminary conclusion in the IAC's Interim Report that the VGE has largely succeeded in its effort to carry forward the substance of the existing Radio Regulations without change to the present registration process for frequency assignments.[43/] TRW also notes that there are some instances where the IAC has expressed disagreement with particular aspects of the VGE report or of the draft proposals of the National Telecommunications and Information Administration. TRW

43/ See Second NOI, FCC 95-36, slip op. at ¶ 90.

endorses the work of the IAC, and agrees with the views expressed in its Interim Report.[44/]

C. Planning For Future World Radiocommunication Conferences.

In addition to soliciting public views relating to WRC-95, the Commission's Second NOI also seeks further comment concerning agendas for future WRCs. In view of the Commission's implicit recognition that obtaining sufficient spectrum for MSS is the most critical aspect of WRC-95, TRW reiterates its view that the agenda for WRC-97 must make provision for resolving any lingering MSS issues that remain from the 1995 conference. Indeed, in the First NOI, the Commission noted that "[i]t is possible that a considerable portion of the 1997 conference could be reserved (by WRC-95) for unresolved WRC-95 issues."[45/]

TRW believes that the U.S. should press to reserve as much of the WRC-97 agenda as is necessary to resolve any and all MSS matters that carry over from WRC-95. As the Commission suggested in the First NOI, it may be necessary to delay consideration of some of the other items included on the preliminary agenda

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44/ See IAC Interim Report at 11-37.

45/ Preparation for International Telecommunication Union World Radiocommunication Conferences, FCC 94-96, slip. op. at ¶ 39 (released May 5, 1994 ("First NOI").

for WRC-97.[46/] Accordingly, TRW suggests that current Agenda Item 3.1 for WRC-97 be slightly revised to reflect a firm commitment to finalizing additional suitable MSS allocations for both NGSO MSS service and feeder links.

III. CONCLUSION

As detailed herein, TRW supports the Commission's proposals to relax the current constraints on MSS use of the 1610-1626.5 MHz and 2483.5-2500 MHz bands, and believes that the Commission should advocate further clarifying steps to facilitate MSS implementation. Even more importantly, the Commission must work persistently to secure sufficient feeder link spectrum to accommodate initially all of the MSS systems conditionally licensed MSS systems in these bands, plus as many future entrants as feasible. Failure to obtain viable feeder link spectrum for MSS could render meaningless the Commission's impressive efforts over the past five years to promote the implementation of this important new service. Finally, looking to the future, the Commission must work to ensure that new service spectrum is made available for MSS to accommodate very high global demand, and that future WRCs

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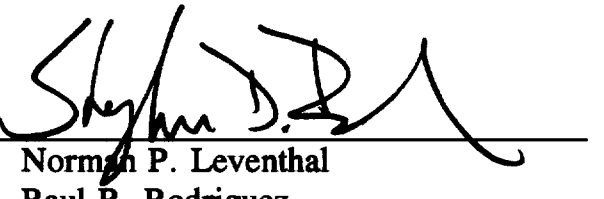
46/ See First NOI, FCC 94-96, slip op. at ¶ 40.

will continue to take into account the need for spectrum to make this service workable, competitive, and widely available.

Respectfully submitted,

TRW INC.

By: 

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ATTACHMENT

Proposal of TRW Inc. for Allocations of Ka-Band and Certain Ku-Band Frequencies to Non-GSO MSS Feeder Links

GHz
15.4-15.7

MOD

Allocation To Services		
Region 1	Region 2	Region 3
15.4-15.7	AERONAUTICAL RADIONAVIGATION FIXED SATELLITE (space-to-Earth) 797C 797E 733	

NOC 733
SUP 797

ADD 797C The use of the band 15.4-15.7 GHz (space-to-Earth) by the fixed-satellite service is limited to feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of No. 2613 do not apply to these fixed-satellite allocations in the space-to-Earth direction of transmission.

ADD 797E: The use of the band 15.4-15.7 GHz (space-to-Earth) by the fixed satellite service for feeder links for non-geostationary satellite networks is subject to the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between non-geostationary satellite networks (space-to-Earth) and between non-geostationary satellite networks (space-to-Earth) and terrestrial services.

GHz
18.8-19.7

MOD

Allocation To Services		
Region 1	Region 2	Region 3
18.8-19.2	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 872A MOBILE 872B	
19.2-19.7	FIXED FIXED-SATELLITE (space-to-Earth) 872C (Earth-to-space) 872D MOBILE 872E 872F	

ADD 872A: The use of the band 18.8-19.2 GHz (Earth-to-Space) by the fixed-satellite service is limited to feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of No. 2613 do not apply to these fixed-satellite allocations in the Earth-to-space direction of transmission.

ADD 872B: The use of the band 18.8-19.2 GHz (Earth-to-space) by the fixed satellite service for feeder links for non-geostationary satellite networks is subject to the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary satellite networks (space-to-Earth) and non-geostationary satellite networks (Earth-to-space), between non-geostationary satellite networks (Earth-to-space), and between non-geostationary satellite networks (Earth-to-space) and terrestrial services.

ADD 872C: The band 19.2-19.7 GHz (space-to-Earth) may also be used by the fixed-satellite service on a primary basis for feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of No. 2613 do not apply to this fixed-satellite allocation in the space-to-Earth direction of transmission.

ADD 872D: The use of the band 19.2-19.7 GHz (Earth-to-Space) by the fixed-satellite service is limited to feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of No. 2613 do not apply to these fixed-satellite allocations in the Earth-to-space direction of transmission.

ADD 872E The use of the band 19.2-19.7 GHz (space-to-Earth) by the fixed-satellite service is subject to the application of the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary networks (space-to-Earth) and non-geostationary satellite networks (space-to-Earth), between non-geostationary satellite networks (space-to-Earth), and between non-geostationary satellite networks (space-to-Earth) and terrestrial services. Emissions from non-geostationary space stations shall not exceed the power flux density limits at the Earth's surface as specified in No. MOD2578 [suitably modified for this frequency band]. Non-geostationary satellite space stations shall not exceed the power flux-density limit at the geostationary satellite orbit as specified in No. 2631. Stations of geostationary fixed-satellite networks brought into use in the band 19.2-19.7 GHz after November xx, 1995 shall not claim protection from and shall not cause harmful interference to non-geostationary mobile-satellite service feeder link networks in this band.

ADD 872F: The use of the band 19.2-19.7 GHz (Earth-to-space) by the fixed satellite service for feeder links for non-geostationary satellite networks is subject to the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary satellite networks (space-to-Earth) and non-geostationary satellite networks (Earth-to-space), between non-geostationary satellite networks (Earth-to-space), and between non-geostationary satellite networks (Earth-to-space) and terrestrial services.

GHz
19.7-20.2

MOD

Allocation To Services		
Region 1	Region 2	Region 3
19.7-20.1 FIXED-SATELLITE (space-to-Earth) Mobile-Satellite (space-to-Earth) 873 873F 873G	19.7-20.1 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 873 873A 873B 873C 873D 873E 873F 873G	19.7-20.1 FIXED-SATELLITE (space-to-Earth) Mobile-Satellite (space-to-Earth) 873 873F 873G
20.1-20.2	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 873 873A 873B 873C 873D 873F 873G	

NOC 873 873A 873B 873C 873D 873E

ADD 873F: The fixed-satellite service allocation at 19.7-20.2 GHz (space-to-Earth) may also be used on a primary basis for feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of RR 2613 do not apply to this fixed-satellite allocation in the space-to-Earth direction of transmission.

ADD 873G: The use of the band 19.7-20.2 GHz (space-to-Earth) by the fixed satellite service is subject to the application of the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary satellite networks (space-to-Earth), between non-geostationary satellite networks (space-to-Earth), and between non-geostationary satellite networks (space-to-Earth) and terrestrial services. Emissions from non-geostationary space stations shall not exceed the power flux density limits at the Earth's surface as specified in No. MOD2578 [suitably modified for this frequency band]. Non-geostationary satellite space stations shall not exceed the power flux-density limit at the geostationary satellite orbit as specified in No. 2631. Stations of geostationary fixed-satellite networks brought into use in the band 19.7-20.2 GHz after November xx, 1995 shall not claim protection from and shall not cause harmful interference to non-geostationary mobile-satellite service feeder link networks in this band.

GHz
28.5-29.5

MOD

Allocation To Services		
Region 1	Region 2	Region 3
28.5-29.0	FIXED FIXED-SATELLITE (Earth-to-space) 882D MOBILE Earth Exploration-Satellite (Earth-to-space) 882C 882B	
29.0-29.5	FIXED FIXED-SATELLITE (Earth-to-space) 882D 882E 882F MOBILE Earth Exploration-Satellite (Earth-to-space) 882C 882B	

NOC 882B 882C 882D

ADD 882E: The fixed-satellite service allocation at 29.0-29.5 GHz (Earth-to-space) may also be used on a primary basis for feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of RR 2613 do not apply to this fixed-satellite allocation in the Earth-to-space direction of transmission.

ADD 882F: The use of the band 29.0-29.5 GHz (Earth-to-space) for feeder links for non-geostationary satellite networks is subject to the application of the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary networks (Earth-to-space) and non-geostationary satellite networks (Earth-to-space), between non-geostationary satellite networks (Earth-to-space), and between non-geostationary satellite networks (Earth-to-space) and terrestrial services. Stations of geostationary fixed-satellite networks brought into use in the band 29.0-29.5 GHz after November xx, 1995 shall not claim protection from and shall not cause harmful interference to non-geostationary mobile-satellite service feeder link networks in this band.

GHz
29.5-30.0

MOD

Allocation To Services		
Region 1	Region 2	Region 3
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 882D Mobile-Satellite (Earth-to-space) Earth Exploration- Satellite (Earth-to-space) 882C 882B 883 883G 882H	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 882D MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882C 873A 873B 873C 873E 882B 883 882G 882H	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 882D Mobile-Satellite (Earth-to-space) Earth Exploration- Satellite (Earth-to-space) 882C 882B 883 882G 882H
29.9-30.0	FIXED-SATELLITE (Earth-to-space) 882D MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882C 873A 873B 873C 882 882A 882B 883 882G 882H	

NOC 873A 873B 873C 873E 882A 882B 882C 882D

ADD 882G: The fixed-satellite service allocation at 29.5-30.0 GHz (Earth-to-space) may also be used on a primary basis for feeder links for non-geostationary satellite systems in the mobile-satellite service. The provisions of RR 2613 do not apply to this fixed-satellite allocation in the Earth-to-space direction of transmission.

ADD 882H: The use of the band 29.5-30.0 GHz (Earth-to-space) by the fixed satellite service is subject to the application of the coordination and notification procedures set forth in Resolution 46 [suitably modified], for the coordination between geostationary satellite networks (Earth-to-space), between non-geostationary satellite networks (Earth-to-space), and between non-geostationary satellite networks (Earth-to-space) and terrestrial services. Stations of geostationary fixed-satellite networks brought into use in the band 29.5-30.0 GHz after November xx, 1995 shall not claim protection from and shall not cause harmful interference to non-geostationary mobile-satellite service feeder link networks in this band.